

NFB ACI-West

Proposal for Completion

***"Time-Lapse Canada"***  
***(a.k.a. "Earth Moves")***

**Modular film series**  
**5 films**  
**3 minutes each**

**Producer: George Johnson**  
**Director, writer, research: Stephen Arthur**  
**January 2001**  
**(revised June 2001)**

***Proposal Includes:***

- Storyboards (5)
- Demonstration Videotape
  - Budget

**Alternative Titles:**

*The Accelerated Earth*  
*Moving Mountains*  
*The Earth Moved*  
*Rewinding Geography: A Billion Years in Three Minutes Flat*  
*Instant Replay: The Transforming World*  
*Ten Million Years Per Second*  
*Incontinent Continent*  
*Earth Unbound*  
*Land Unlocked*

## Introduction

Intended for students, the *Time-lapse Canada* series will be a realistic simulation of an amazing spectacle: the extreme transformations of the landscape of North America that actually happened over the last billion years. It will portray the geological transformation of Canada as though it were an actual time-lapse film spanning hundreds of millions of years in a few minutes, produced with the latest digital 3D animation software. A film like this has never been made. It will focus on Canada throughout.

## Mission

No other producer has made a film that portrays the world in this way. NFB animated films on this subject are over 23 years old and their limited animation focuses on the underlying theoretical processes of plate tectonics. Market research from schools shows that:

- both science and social studies teachers are keen to use this film series
- the films can be used for multiple purposes in any given class ("multiple subject linkage"), including Earth, Space, Life, and Physical Sciences, natural resources, weather, environment, geographical thinking, topographical maps, features of Canada, world geography, History, and even Language Arts (e.g., how science-fiction writers extrapolate from the past)
- the films would be particularly appealing to students
- the film series would provide a much-needed integrated resource for this subject
- development of cognitive skills would be well supported by these films, such as helping students comprehend long time scales and the mapping of the world around them

*Time-Lapse Canada* will reveal Canada to Canadians and to the world in a way they've never known before, expanding their awareness of the world they're in, and challenging them to think in new ways and bigger contexts.

*Time-Lapse Canada* breaks new ground in form, content, and technique.

*Time-Lapse Canada* showcases the diversity of Canadian creative talent -- researched, written, and designed by an animation director who has been both artist and scientist, and for the first time is able to fulfil his long-held vision of uniting science and art for an unprecedented new vision of the world.

*Time-Lapse Canada* will have a long-lasting world-wide audience, covering a universal subject in the universal language of animation (no words).

## Audience

- Elementary School, Grades 5-7, Science and Social Studies

- Secondary School, all grades (particularly Geography 12)
- International market with a long life, without need for re-versioning
- A strong appeal for adults, as well
- International film festivals as a unique "auteur" animated short

## **Intent**

- To stimulate the imagination and motivate learning.
- To support development of cognitive skills -- such as geographical thinking, comprehending time scales, inferring, and predicting -- by presenting a very concrete example of an abstract subject.
- Non-verbal learning.

## **Treatment**

Imagine a rapidly transforming, organically morphing North American continent captured on film like it was some kind of strange wildlife, by an omnipotent camera in super-fast time-lapse, a film spanning millions of years of geological time every second. No time period is omitted, it's a continuous, real event, seen at such a large time scale that it looks like nothing we've seen or even imagined before. No narration. No diagrams. No section through the Earth to explain. We simply witness in awe the continuous, unfolding action from a bird's-eye view. Continents crash together, building all of our mountains, past, present, and future. Mountains melt continually from erosion, the surface flows, colours shift as climates change or massive asteroid impacts cause mass extinctions. Shorelines flutter continuously as huge inland seas invade, retreat, invade again. Giant chains of volcanic islands smash into and override the mainland to add new land to our continent. Whole continents split apart at bulging rift faults, creating new oceans. Massive ice sheets pulse and strobe across the country dozens of times in the blink of an eye, carving out the Great Lakes. The Earth itself is alive.

Each film stands alone as a module designed to optimally follow the audience's natural interest and enhance the drama of these real events as an experience of being there:

1. All films start (and end) with live action: a familiar scene in a present-day location, from which the camera rises to reveal a full view of North America to start the time-lapse.
2. The time-lapse initially runs *backwards* very fast all the way to 500 million years ago, for orientation. We saw where we came from, so we have an idea of where we are now.
3. The films then run forward in time from a global vantage point, until moving in to the regional focus chosen for that film.

4. The fifth film reveals a world-wide perspective of continental drift during the period of the Canada-centred films, and continues far into the predicted *future*.
5. Rate of time-travel is held constant for each segment, but some segments cover very different time scales. On screen is a time counter, like a simple odometer, zipping through its numbers to give us a very good sense of what time period we're passing through and how fast we're time-travelling. Alterations in the soundtrack also tell us when we're slowing down the time-lapse speed, or speeding up again, without even having to glance at the odometer. The changes in camera distance and time-lapse speed are intended to feel natural, motivated by what the audience likely wants to focus on at that moment. They will hopefully feel that they are operating the travelling time-machine themselves, rather than being herded through a tour by the hand of the filmmaker.

## Software and production

"In few other creative fields is the craft as important to the work of an artist as it is in the digital realm. When creating in some of the areas that still have not gone into a fully digital production environment, the pressures on the artist to be in full command of the craft are usually not overbearing. In those cases the production process usually involves a single artist, tools that have been around for a while (like watercolour paint), and a fairly stable production process that all participants understand.

"In areas that follow the digital art production model the creative and production team is usually made up of several artists and animators. These individuals are required to use tools that are in constant change: hardware reconfigurations and software upgrades are constant.

**To make matters more challenging, today's digital production processes are still not quite standardized because many projects present such novel challenges that the process has to be adapted to those specific challenges."** -- *The Art of 3D Computer Animation and Imaging*, Kerlow, 2000

To that end, we have determined the software and personnel needed, and have allotted sufficient pre-production time to arrive at a strategy for technical implementation of the complex mix of modelling and animation that will deliver these films within the production budget and with the personnel available. The development of the 15-second demonstration clip revealed where some of the challenges lie.

Software will be Discreet's *3ds max 4* and *paint\**, and Questar's *World Construction Set 4*, plus customized programming of a fractal surface shader to use in the rendering of scenes (optional). We have also established an agreement with an experienced production company to handle the crucial roles of Technical Director and Production Manager, with facilities in place for this kind of production. An additional animator will be hired as part of this contract.

## Possible interactive website

There is immense potential for accessing information about the events in this film series through an interactive website, which may be produced as a separate project in parallel with the films. In addition to supplementation with text, country overlays, sectional diagrams, and illustrated scenes of life, a more significant approach would

include access to the original footage to allow the user to travel back and forth at will, at whatever speed they choose, as well as the ability to turn the globe around to centre on any part of it and allow the events to replay from that viewpoint (interactive 3D). Such interactive views could act as a common interface for selecting information, and for accessing other interactive scenarios where the user is able to manipulate the processes, such as dragging to effect uplift and erosion, ice height versus sea level, etc.

The same company chosen for making the films is also capable of re-purposing this material for the web and creating new interactive content.

## **Facts**

Events are derived from many sources, including the most recent continental-drift reconstructions by Scotese 1997 and Danziel 1999 and leading-edge paleogeographic reconstructions of the western cordilleran region by Monger (GSC, in press). Storyboards will be validated and refined for maximal content accuracy during pre-production through informal reviews by the Geological Society of Canada.